

To maintain a 35 U.S.C. §102 rejection, a reference must teach each and every element of the claimed invention. Beukes et al. simply do not do so.

Applicants' invention comprises a priming device for firing a detonator comprising at least an electrical power supply providing a first power source to a timing circuit for timing the action of a firing element of a primer and a power generating means that provides, by charging a capacitor for a designated time interval, a second power source of a sufficient intensity to actuate the firing element only after expiration of the designated timing interval. Thus, the electrical power supply provides current enough to drive a timing device, whereas the power generating means provides current enough to fire the detonator firing element of the primer only after the designated time interval has expired, as recited in each of independent claims 14 and 16. The power generating means, as recited in claim 16, further includes the capacitor, a switch means, and a controlling means, whereby the controlling means controls the charging of the capacitor for a designated time by controlling the switching means that closes the circuit to the capacitor. By closing the switching means the capacitor becomes sufficiently charged to fire the detonator firing element of the primer when the capacitor is discharged. Thus the timing means and power generating means of the claimed invention are integrally associated with one another to fire one or more primers safely and precisely on the basis of time and charge. None of the applied art teach, disclose or suggest the combination of features claimed.

Beukes et al. disclose a detonator 10 using an electronic explosive initiating device 12 wherein, once a designed low voltage threshold is surpassed, the device may be fired (col. 4, lines 24-33). As agreed at the interview, Beukes et al. therefore fires its device 12 based on a designed low voltage threshold rather than a capacitor charged according to a designated time as in the claimed invention. Further, an altogether separate source 72 controls/assigns delay periods corresponding to identification codes provided on the device 12 (col. 6, line 66 - col.

7, line 4). Such is contrary to the single electric power supply source with timing means and power generating means for driving a timing circuit with power insufficient to set off the firing element of a primer, whereas, after a designated time period has expired, a capacitor-based power generating means, which capacitor has been charged a designated time interval, provides a second power source of sufficient intensity to fire the primer as in the claimed invention. Thus Beukes et al. fail to teach, disclose or suggest the combination of features claimed. Accordingly, withdrawal of the 35 U.S.C. §102(e) rejection of claims 14-19, 22, 25 and 26 is respectfully requested.

In item 6 of the Office Action, claims 23 and 24 are rejected under 35 U.S.C. §103(a) as unpatentable over Beukes et al. in view of Jarrott et al. (U.S. Patent No. 4,632,031). The rejection is respectfully traversed.

Applicants' invention is discussed above. Likewise, Beukes et al. is discussed above.

Jarrott et al., as agreed at the interview, fail to overcome the deficiencies of Beukes et al. with respect to claim 16 from which claims 22 and 24 depend. Accordingly, withdrawal of the 35 U.S.C. §103(a) rejection of claims 23 and 24 is respectfully requested.

In item 7 of the Office Action, claim 27 is rejected under 35 U.S.C. §103(a) as unpatentable over Beukes et al. The rejection is respectfully traversed.

Applicants' invention is discussed in detail above. Likewise, Beukes et al. are discussed in detail above. Beukes et al., in combination with no other reference, fail to overcome the deficiencies of Beukes et al. with respect to claim 16 from which claim 27 directly or indirectly depends. Accordingly, withdrawal of the 35 U.S.C. §103(a) rejection of claim 27 is respectfully requested.

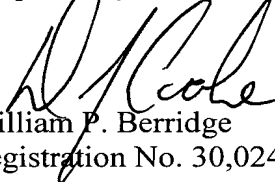
In item 8 of the Office Action, claims 28 and 29 are rejected under 35 U.S.C. §103(a) as unpatentable over Beukes et al. in view of Powell (U.S. Patent No. 5,877,696). The rejection is respectfully traversed.

Applicants' invention is discussed in detail above. Likewise Beukes et al. are discussed in detail above. As agreed at the interview, Powell fails to overcome the deficiencies of Beukes et al. with respect to claim 16 from which claims 28 and 29 depend. Accordingly, withdrawal of the 35 U.S.C. §103(a) rejection of claims 28 and 29 is respectfully requested.

Applicants respectfully request reconsideration of the application. Applicants submit that claims 14-29 patentably distinguish over the art applied and pose no 35 U.S.C. §112 issues. Accordingly, allowance of claims 14-29 is respectfully solicited.

Should the Examiner determine that anything further is desirable to place the application in condition for allowance, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

Respectfully submitted,


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Attachment:
Appendix

Date: February 15, 2002

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<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>

APPENDIX

Changes to Claims:

The following is a marked-up version of the amended claims:

14. (Twice Amended) A priming device for a detonator, comprising:
- timing means for timing the action of a firing element of a primer;
- an electrical power supply that provides a first power intensity to the timing means; and
- power generating means, the power generating means ~~capable of~~ for generating, through a resistive circuit and charged capacitor, a second power intensity sufficient to actuate the firing element upon expiration of a timing interval ~~as determined by the timing means~~, the first power intensity from the power supply not being sufficient to actuate the firing element.
16. (Amended) A priming device for a detonator, comprising:
- an electrical power supply means for timing the action of a firing element of a primer; and
- power generating means for generating, through a resistive circuit, a current intensity sufficient to actuate the firing element upon expiration of a timing interval, the power generating means comprising a capacitor, switching means, and controlling means for controlling the switching means by allowing the capacitor to be charged for a charging time during the timing interval and then discharged, the discharge causing the firing element to act on the primer.